

Common
**POISONOUS
PLANTS**



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IN SOME of the western grazing states the annual loss of livestock from eating poisonous plants is enormous. New York and her neighboring states, with a more diversified agriculture, have not experienced such large losses as those in states where the raising of livestock is more dependent upon the native vegetation.

At least fifty kinds of plants in New York State are known to be poisonous to livestock under certain conditions. Most of these plants have a disagreeable taste so that stock will ordinarily leave them alone. Some of these poisonous plants start growing early in the spring before the grass is green; others remain green after the grass has dried up. Therefore, most stock poisoning in pastures occurs either in the early spring when the grass is still short or in late summer and autumn when the grass is scarce or dried up. With a scarcity of forage, animals are often forced to eat poisonous plants which otherwise would be left alone.

Not all stock poisoning in pastures is caused by plants; sometimes it is from minerals. Lead poisoning may result when animals lick newly painted surfaces or discarded paint cans. Poisonous fertilizers, especially nitrate of soda, are sometimes obtained by animals licking empty bags or drinking the water in which the bags were washed. Arsenic, obtained by eating grass under sprayed trees or by licking spraying equipment or containers of arsenicals, may poison animals. In any case of poisoning a veterinarian should be consulted as soon as possible.

If poisoning appears to be of plant origin, the pasture should be examined carefully for poisonous plants. It is well to bear in mind that only a few poisonous plants grow in the open part of a pasture. Among the plants of the open field are the tall field buttercup, horsetail, and bracken fern. In the fence rows and hedges may be wild cherries; along the banks of streams and ditches and in springy or marshy spots, water-hemlock or *Cicuta* and European bittersweet or nightshade; and in the woodland part of the pasture white snakeroot, mountain laurel, sheep laurel, Dutchman's breeches, and bracken fern.

Nearly every farmer recognizes that certain plants are poisonous, but

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he should learn the poisonous plants of his neighborhood, and should try to know:

The poisonous plants on his place.

Where the plants are growing.

Which parts of the plant contain the poison.

What season of the year the plant is most dangerous.

What animals are likely to eat the plant and become poisoned.

What part of the plant animals would be likely to eat.

Under what conditions poisoning occurs.

The material on the following pages has been prepared to make readily accessible the most important information concerning the commoner plants of New York State that may poison livestock. Plants causing poisoning by contact in humans are discussed in Extension Bulletin 191, *Poison Ivy and Poison Sumac* and in Extension Bulletin 441, *Plants Poisonous to Touch*.

Braken or Brake Fern, *Pteridium latiusculum*. Figure 1.

Braken fern is common on dry, sandy or gravelly soil, particularly in neglected pastures or open, dry woodlands.

The young shoots are sometimes cooked and eaten as greens or pot herbs. Thorough cooking removes the poisonous ingredients, leaving the green harmless and nutritious.

Ordinary brake ferns are not eaten by cattle, except during the latter part of a dry season when normal forage is scarce. At such a time these plants are among the few to remain green, and are likely to be grazed heavily. Hay containing appreciable amounts of this fern should not be fed to cattle or horses, as the poisonous character is not lost on drying. Hogs eat all parts of the fresh plant without injury, in fact they appear to relish it, especially in the autumn.

Symptoms of poisoning usually appear after two to four weeks of continuous grazing. These include very high temperature, extreme salivation, and bleeding from the nose followed by hemorrhages of internal organs.

Field horsetail, *Equisetum arvense*. Figure 2, A to F.

Field horsetail is common on sandy, poorly drained soils of meadows and pastures throughout the state.

This plant has been found to be most poisonous when present in hay fed to horses. Hay cut from low or poorly drained meadows may contain considerable quantities of horsetail. Horsetail in pastures does not seem to be harmful, probably because the laxative green feed eaten causes it to be excreted before the poison affects the system. Other native species

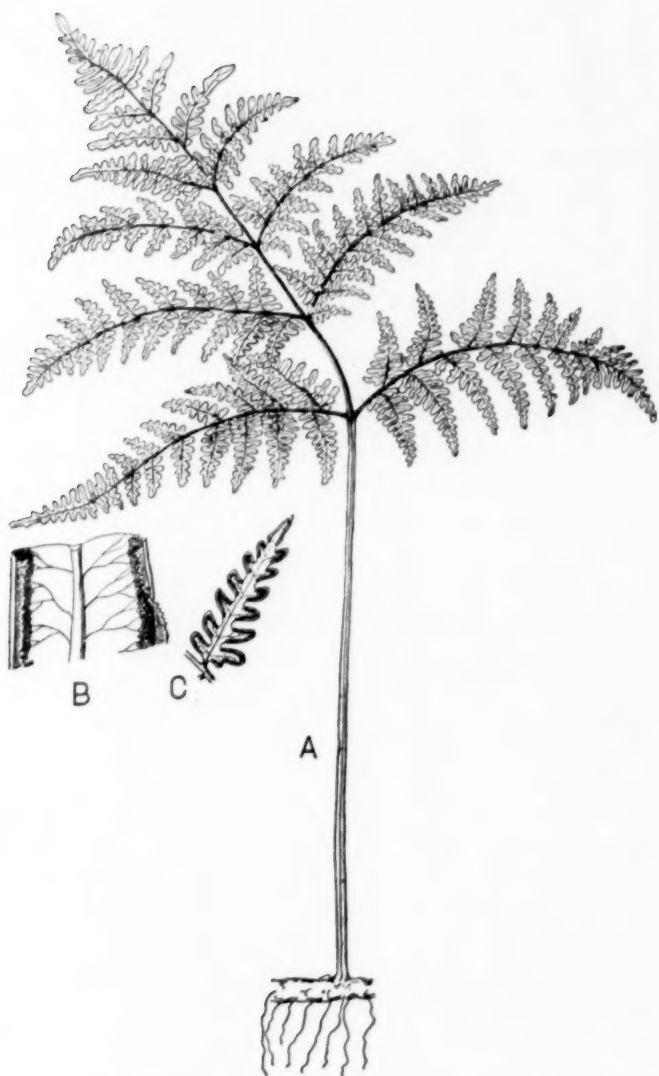


FIGURE 1. BRAKEN FERN, *PTERIDIUM LATIUSCULUM*

A, frond attached to rootstock; reduced to $\times 1/6$ natural size. B, a small section of a pinnule showing marginal sporangia; $\times 4$. C, a pinnule; $\times 1$

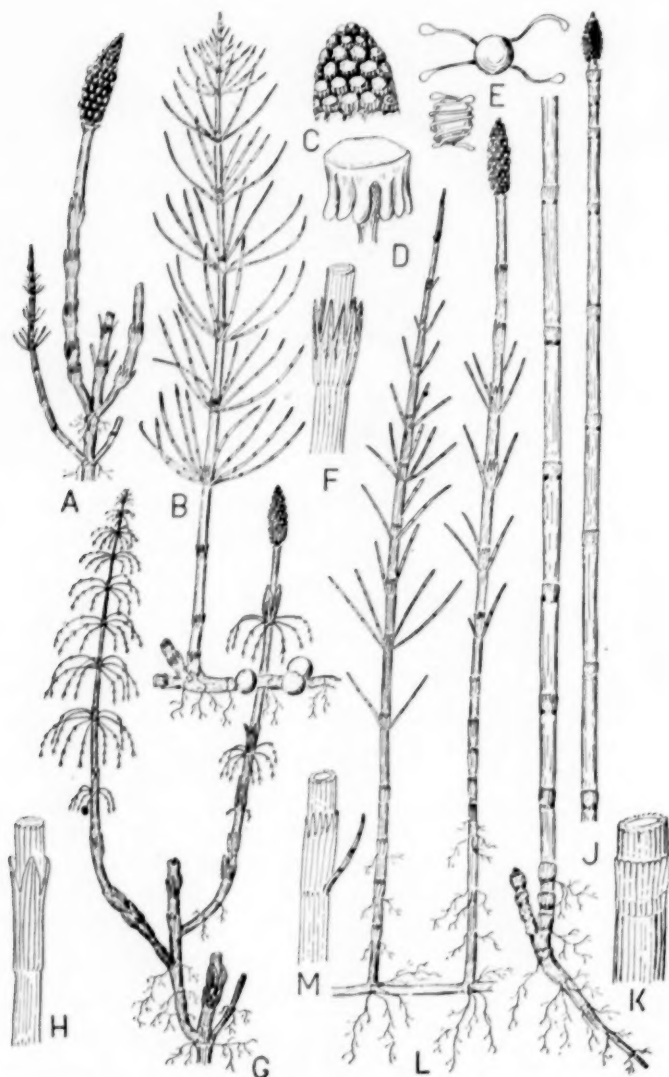


FIGURE 2. FIELD HORSETAIL, *EQUISETUM ARVENSE* (A TO F); WOOD HORSETAIL, *EQUISETUM SYLVATICUM* (G AND H); SCOURING RUSH, *EQUISETUM HYEMALE* (J AND K); AND MARSH HORSETAIL, *EQUISETUM PALUSTRE* (L AND M)

A, fertile shoot bearing a cone; reduced to 1/3 natural size. B, sterile shoot; $\times 1/3$. C, part of cone; $\times 3$. D, sporangophore; $\times 6$. E, spores; $\times 100$. F, node; $\times 1$. G, sterile shoot with fertile shoot attached; $\times 1/3$. H, section of stem with whorl of leaves at node; $\times 1$.

I, stem with cone; $\times 1/3$. K, node; $\times 1$. L, stem with cone; $\times 1/3$. M, node; $\times 1$.

including wood horsetail (*Equisetum sylvaticum*), scouring-rush (*E. hyemale*), and marsh horsetail (*E. palustre*) may also cause poisoning.

The symptoms appear in two to five weeks in the following order: unthriftiness and loss of weight, loss of muscular control followed by swaying and staggering. The animal usually falls and cannot arise. Violent struggle then weakens the animal, and death is caused by exhaustion. Horses treated before falling usually can be saved.

American hellebore. *Veratrum viride*. Figure 3, A to D.

American hellebore is found on wet or swampy ground, particularly along streams or in low meadows and also in wet open woods. These stout plants frequently grow in scattered clumps in pastures where cattle have grazed around them. Animals avoid eating them because of the sharp burning taste due to the presence of a poisonous alkaloid. Sometimes young animals or those unfamiliar with the *Veratrum* eat it with fatal results.

Lily-of-the-valley. *Convallaria majalis*. Figure 3, E and F.

Lily-of-the-valley, a common garden flower, has escaped and become established in several places. The leaves are poisonous, but are rarely eaten.

Star-of-Bethlehem. *Ornithogalum umbellatum*. Figure 3, G and H.

Star-of-Bethlehem, a common garden flower, also is established in some pastures. It has poisonous leaves and bulbs.

Pokeweed. *Phytolacca americana*. Figure 4.

Pokeweed, a tall perennial herb, is common in clearings, in open woods, and along the borders of woods.

Animals rarely eat enough of the tops of pokeweed to be poisoned. The most poisonous part of this plant is the large, fleshy root. People have been poisoned by eating the roots with the young shoots as pot herbs. If the young shoots are cooked thoroughly, and the first water in which they are cooked is discarded, they make excellent greens. Children are sometimes poisoned from eating the berries.

Corn cockle, Purple cockle. *Agrostemma githago*. Figure 5.

Corn cockle, an introduced weed, is locally common in fields of winter wheat, mostly in the western part of the state.

Wheat screenings containing large amounts of the seeds of this plant are dangerous when fed to poultry. An ounce of the seed will kill a hen, and proportionally larger amounts are equally dangerous when in the feed of other livestock.

The symptoms are: colic, vomiting, salivation, paralysis, and death of animals.

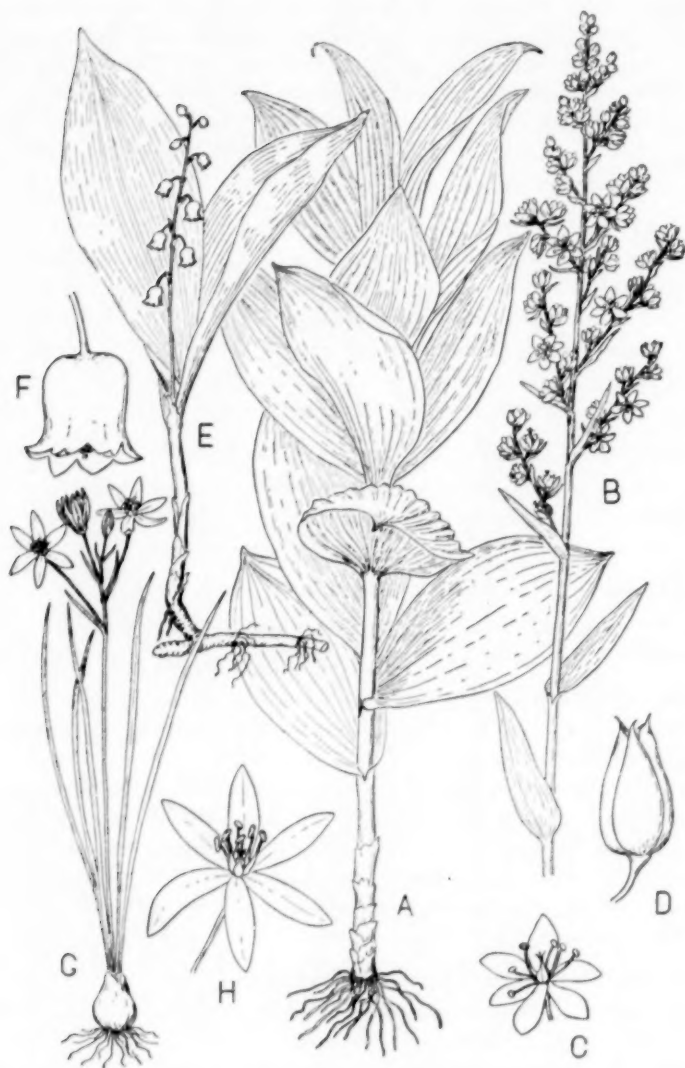


FIGURE 3. AMERICAN HELLEBORE, *VERATRUM VIRIDE* (A TO D); LILY-OF-THE-VALLEY, *CONVALLARIA MAJALIS* (E AND F); AND STAR-OF-BETHEHEM, *ORNITHOGALUM UMBELLATUM* (G AND H)

A, small plant showing habit; $\times 1/3$. B, flowering shoot; $\times 1/3$. C, flower; $\times 1$. D, capsule; $\times 1$. E, plant; $\times 1/3$. F, flower; $\times 2$. G, plant; $\times 1/3$. H, flower; $\times 1$



FIGURE 4. POKEWEEED, PHYTOLACCA AMERICANA

A, branch showing general habit; $\times 1/3$. B, root; $\times 1/4$. C, flower; $\times 2$. D, berries; $\times 2$.
E, seed; $\times 3$



FIGURE 5. CORN COCKLE, AGROSTEMMA GITHAGO

A, plant showing general habit; $\times 1/3$. B, autumn rosette stage; $\times 1/3$. C, flower with calyx and corolla removed; $\times 1$. D, capsule with calyx; $\times 1$. E, vertical section of capsule; $\times 1$. F, seed; $\times 4$



FIGURE 6. COW COCKLE, *SAPONARIA VACCARI* (A TO E); AND BOUNCING BET, *SAPONARIA OFFICINALIS* (F TO K)

A, plant showing habit; $\times 1/3$. B, pistil surrounded by angular calyx; $\times 1$. C, vertical section of pistil; $\times 2$. D, cross-section of capsule and calyx; $\times 1$. E, seed; $\times 5$.
 F, portion of plant with flowers; $\times 1/3$. H, flower; $\times 1/3$. J, seed; $\times 5$. K, capsule surrounded by calyx; $\times 1$.

Bouncing bet. *Saponaria officinalis*. Figure 6, F, G, H, J, and K.

Bouncing bet is a common weed along roadsides and about waste places. Its seeds contain the same poisonous substances (saponins) as does the corn cockle and are equally dangerous when fed in poultry feeds or dairy rations. The seeds of a closely related weed, cow cockle (*Saponaria vaccaria*), figure 6, A to E, are sometimes found in feeds containing screenings. Cow cockle is sometimes found growing about farmyards, but it does not spread much.

Red baneberry. *Actaea rubra*. Figure 7, A to D.

Red baneberry is a native perennial of rich woodlands. The red berries are poisonous. The white baneberry (*Actaea alba*), figure 7, E, is likewise poisonous.

Buttercup. *Ranunculus acris*. Figure 8, D to F.

Buttercup is common in moist meadows and pastures.

The fresh leaves and tops are poisonous when eaten by livestock. The poison is an acrid, volatile substance that leaves the plants as they dry, hence dried buttercups in hay are harmless. Because of the bitter taste, buttercups are usually not eaten by cattle. It is only when growing in damp soft earth where they are easily pulled up along with other vegetation that buttercups are eaten in quantities sufficient to cause poisoning. Other common species, such as the small-flowered buttercup (*Ranunculus abortivus*), figure 8, A to C, and the cursed crowfoot (*Ranunculus sceleratus*) are also poisonous.

Dutchman's breeches. *Dicentra cucullaria*. Figure 9, D to F.

Dutchman's breeches, a spring-flowering native plant, is found in moist leaf mold of open woods and woodland pastures. Squirrel corn (*Dicentra canadensis*), figure 9, A to C, growing in similar situations, is also poisonous.

Although unpalatable to livestock, cattle will eat the plants in early spring before other vegetation is available, and at such times fatal poisoning may occur. The danger is usually past by the last of May, except at high altitudes where the season is later.

The symptoms are: trembling, frothing at the mouth, and convulsions accompanied by difficult breathing and moaning.

Wild black cherry. *Prunus serotina*. Figure 10, F to H.

Wild black cherry is a small tree or shrub widely distributed and particularly common along fences and in old fields. The choke-cherry (*Prunus virginiana*), figure 10, A to C, and the pin cherry (*Prunus pennsylvanica*), figure 10, D and E, grow in similar situations and have the same poisonous properties.

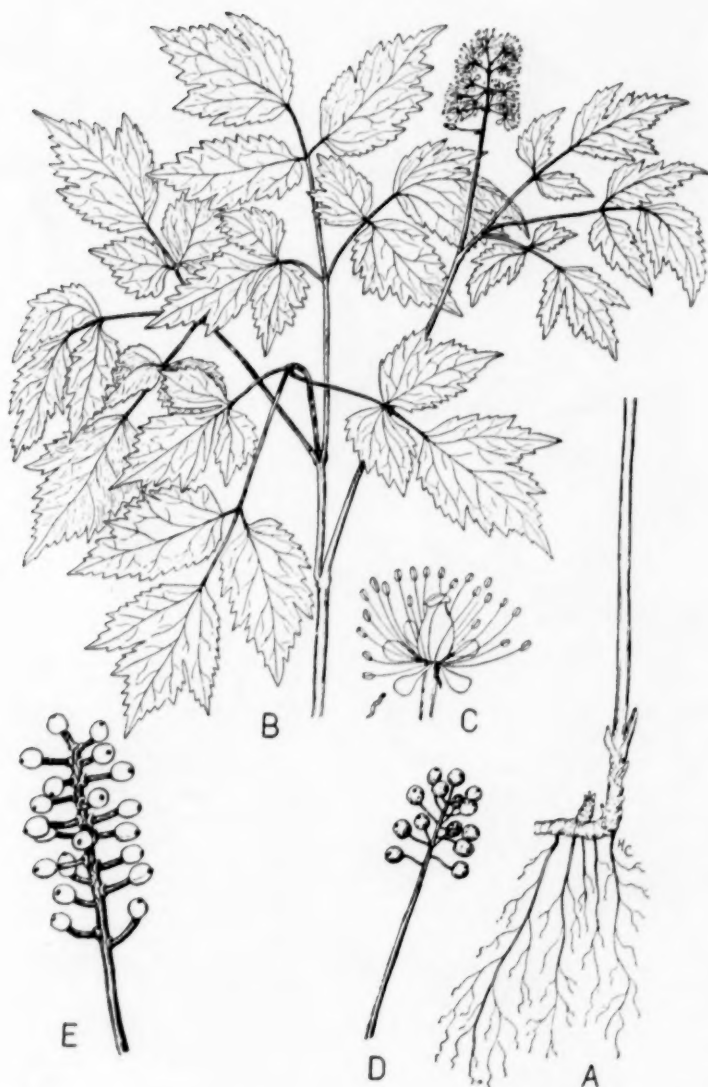


FIGURE 7. RED BANEERRY, *ACTAEA RUBRA* (A TO D), AND WHITE BANEERRY, *ACTAEA ALBA* (E)

A and B, plant showing habit; $\times 1/3$. C, flower; $\times 2$. D, cluster of berries; $\times 1/3$
 E, cluster of berries; $\times 1/3$

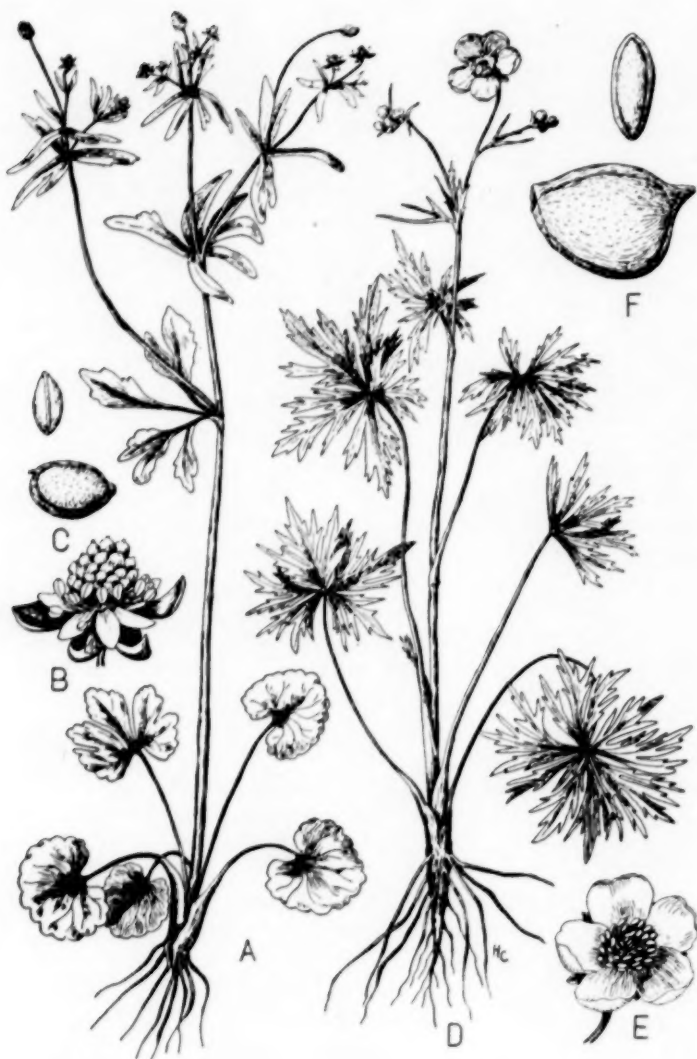


FIGURE 8. SMALL-FLOWERED BUTTERCUP, *RANUNCULUS ABORTIVUS* (A TO C), AND TALL FIELD BUTTERCUP, *RANUNCULUS ACRIS* (D TO F)

A, plant showing habit; $\times 1/3$. B, flower; $\times 3$. C, achenes; $\times 10$
 D, plant showing habit; $\times 1/6$. E, flower; $\times 1$. F, achenes; $\times 10$

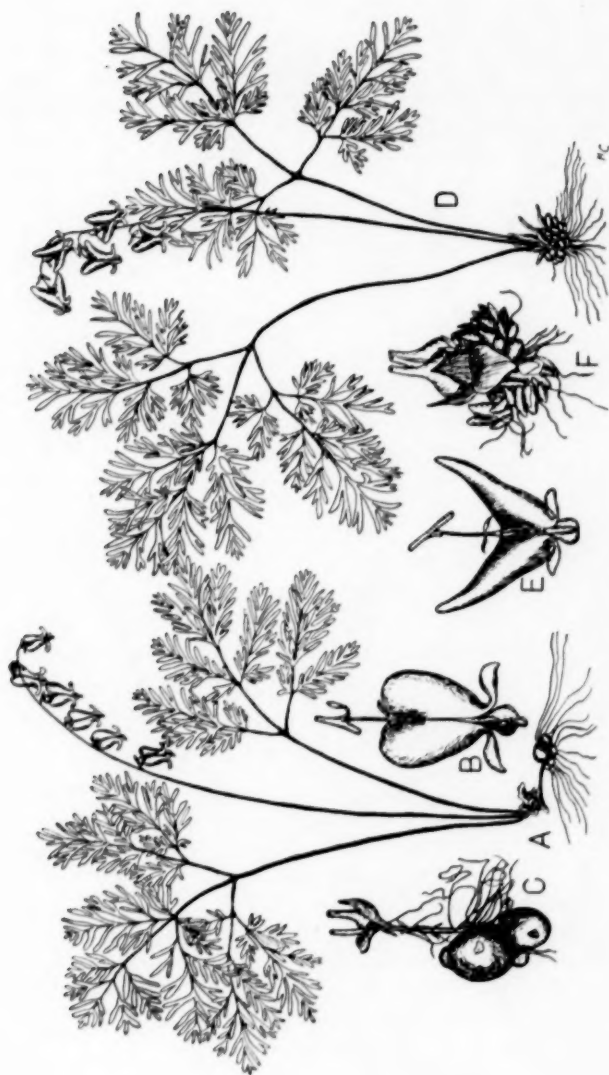


FIGURE 9. SQUIRREL CORN, *DICENTRA CANADENSIS* (A TO C) AND DUTCHMAN'S BREECHES, *DICENTRA CUCULLARIA* (D TO F)

A, plant showing habit; $\times 1/3$. B, flower; $\times 1$. C, tubers; $\times 1$.
D, plant showing habit; $\times 1/3$. E, flower; $\times 1/3$. F, tubers; $\times 1$.

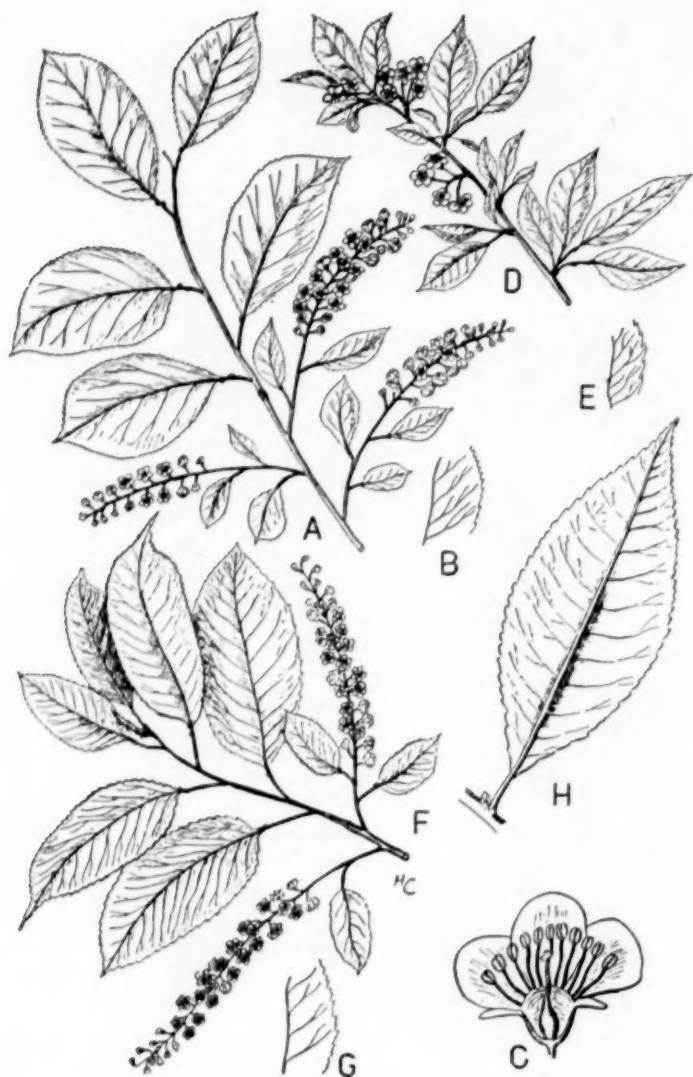


FIGURE 10. CHOKE-CHERRY, *PRUNUS VIRGINIANA* (A TO C), PIN CHERRY, *PRUNUS PENNSYLVANICA* (D AND E); AND WILD BLACK CHERRY, *PRUNUS SEROTINA* (F TO H)

A, branch showing leaves and flower-clusters; $\times 1/3$. B, leaf margin; $\times 1$. C, flower in vertical section; $\times 3$.

D, branch showing leaves and flower-clusters; $\times 1/3$. E, leaf margin; $\times 1$.

F, branch showing leaves and flower-clusters; $\times 1/3$. G, leaf margin; $\times 1$. H, leaf showing lower surface with hairy fringe along midrib; $\times 1/2$.

The wild cherries are dangerous because, under certain conditions, they form hydrocyanic acid. This highly toxic substance may accumulate in the wilted leaves in quantities sufficient to cause fatal poisoning of grazing animals. Hydrocyanic acid is a volatile poison which is lost from the foliage upon drying. Hay containing thoroughly dried foliage of the wild cherry is not injurious. Most cases of cherry poisoning occur when pastures are overgrazed or when wilted cherry foliage is thrown in the way of feeding stock.

A poisoned animal goes into convulsions, breathes with difficulty, bloats, and dies usually in less than an hour after eating the cherry leaves.

Black locust. *Robinia pseudo-acacia*. Figure 11.

Black locust is frequently cultivated, and now grows wild in many places.

The bark and young shoots of black locust contain a poison (robin), which may be fatal to animals gnawing the bark or grazing the young growth. Children also have been poisoned by chewing the inner bark.

Leafy spurge. *Euphorbia esula*. Figure 12, E to H.

Leafy spurge is a perennial weed of meadows, pastures, and cultivated fields.

Both the leafy spurge and a smaller species, the cypress spurge (*Euphorbia cyparissias*), figure 12, A to D, contain a milky acrid juice that carries the poison. Livestock in pasture normally will not feed on the bitter spurges. Hay containing spurges, however, when fed continuously causes a weakened condition and the animal suffers excessive scours, and finally dies. Cows usually will not eat the leafy spurge in hay; they very carefully pick out the hay and leave the spurge.

St. Johns-wort. *Hypericum perforatum*. Figure 13.

St. Johns-wort is a common perennial herb of old meadows, roadsides, and waste lands, especially where the soil is dry or gravelly.

A substance in St. Johns-wort affects the nerves near the surface of the skin in animals which feed on the plant. White-skinned cattle, horses, and sheep are made sensitive to sunlight by this substance. Their skin blisters, and the hair falls out if the animals are exposed to sunlight after having fed on St. Johns-wort. Animals with dark hair or dark pigmented skin show no symptoms or reactions to sunlight after eating this plant. Although injurious when eaten in quantity, St. Johns-wort is not normally troublesome in New York State.

Water-hemlock. *Cicuta maculata*. Figure 14.

Water-hemlock, a perennial herb, grows in marshy meadows and pastures and along the wet margins of streams and ditches.



FIGURE 11. BLACK LOCUST, *ROBINIA PSEUDO-ACACIA*

A, shoot with flower-clusters; $\times 1/3$. B, flower; $\times 1$. C to E, flower parts separated; $\times 1$.
F, legume or seed pod; $\times 1/3$

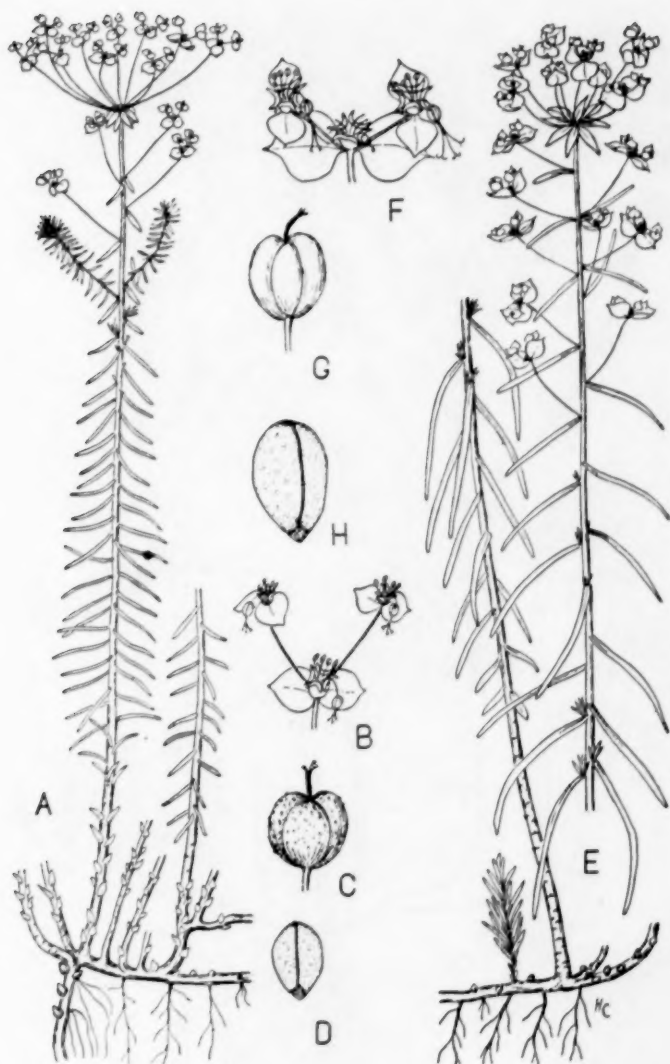


FIGURE 12. CYPRESS SPURGE, *EUPHORBIA CYPARISSIAS* (A TO D), AND LEAFY SPURGE, *EUPHORBIA ESULA* (E TO H)

A, plant showing habit; $\times 1/3$. F, portion of a flower-cluster; $\times 1$. C, capsule; $\times 3$. D, seed $\times 6$. E, plant showing habit; $\times 1/3$. F, portion of a flower-cluster; $\times 1$. G, capsule; $\times 3$. H, seed; $\times 6$.

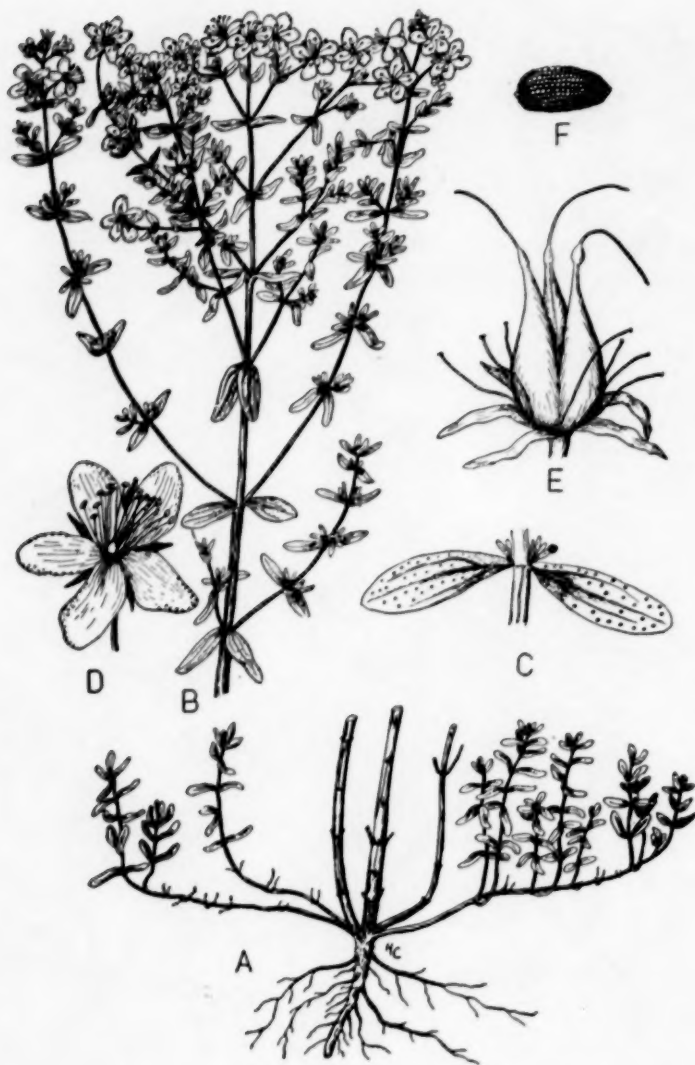


FIGURE 13. ST. JOHNS-WORT, *HYPERICUM PERFORATUM*

A, basal part of plant showing roots and runners; $\times 1/3$. B, flowering shoot; $\times 1/3$. C, opposite leaves showing translucent dots; $\times 1/3$. D, flower; $\times 1$. E, fruit; $\times 3$. F, seed; $\times 10$

FIGURE 14. WATER-HEMLOCK, *CICUTA MACULATA*

A, upper part of plant showing habit; $\times 1/3$. B, cluster of fleshy roots; $\times 1/3$. C, vertical section through base of stem; $\times 1/3$. D, flower; $\times 4$. E, pistil; $\times 4$. F, fruit; $\times 5$. G, cross-section of a fruit showing oil-tubes; $\times 5$. H, seed; $\times 5$.

Water-hemlock is one of the most common poisonous plants to cause stock losses in the United States. The roots and seeds are more highly poisonous than are other plant parts. Animals grazing in the early spring frequently pull up the water-hemlock roots which grow in soft, wet ground. In periods of drought cattle may feed in the more marshy pasture land and eat the water-hemlock which would be avoided at other times. The rootstocks contain a resinous substance so poisonous that a small piece is enough to cause the death of a cow. Children are sometimes fatally poisoned through mistaking the root of water-hemlock for wild parsnip or some other edible root.

Water-hemlock poisoning in man leads to nausea, with perhaps violent vomiting and diarrhea. The pupils become dilated, the breathing laborious, and there is sometimes frothing at the mouth and violent convulsions. Among cattle also there is frothing at the mouth, followed by violent convulsions. The animal may extend its legs rigidly, throw back its head, and bellow or groan. The convulsions end in death.

Poison hemlock. *Conium maculatum*. Figure 15.

Poison hemlock is a large biennial herb that was introduced from Europe as a medicinal herb. It has escaped and occurs on rich soil about neglected places, ditch banks, and roadsides in many sections of New York State.

The poison of hemlock is an alkaloid found in the seeds and, especially at flowering time, in the leaves. The root of the first-year plant is poisonous, especially in the latter part of the growing season.

Recent cases of poisoning have arisen by mistaking the seed of hemlock for that of anise, or the roots for parsnips.

The symptoms include gradual weakening of muscular power, impaired sight, and paralysis of the lungs. The poisoning differs from that of water-hemlock in the absence of convulsions.

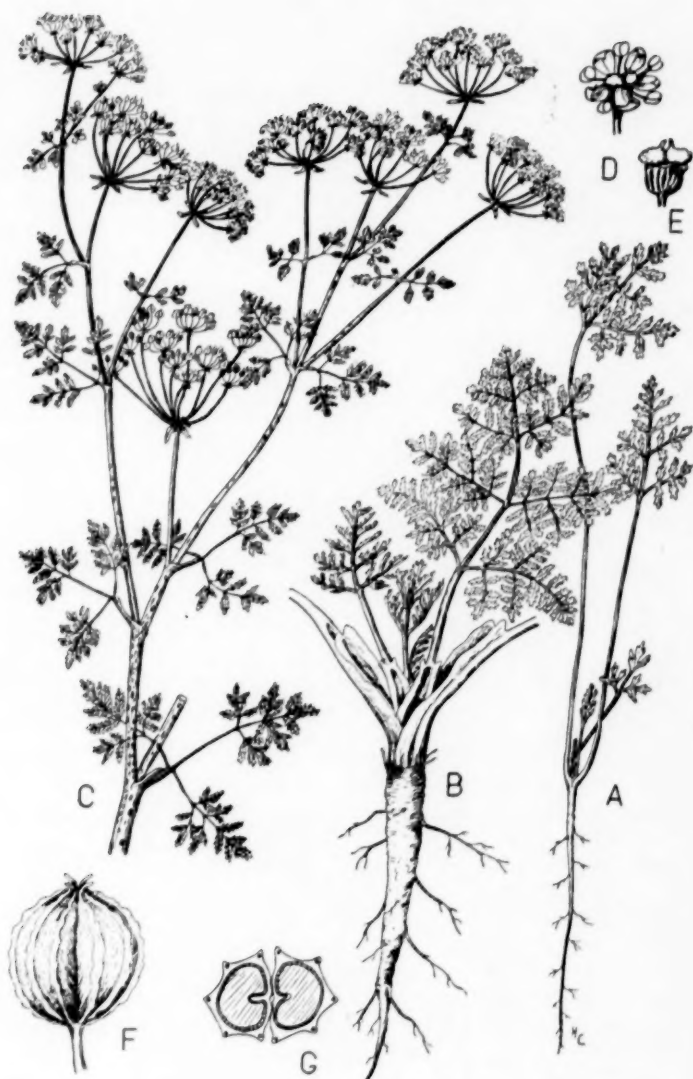
Great laurel. *Rhododendron maximum*.

Great laurel, a woodland shrub, occurs through the Allegheny Mountains from New York to Georgia. It is rare in New York except in the southeastern counties.

The leaves of this plant contain a poisonous substance dangerous when grazed by sheep and cattle. Because the foliage is tough and bitter, animals will not eat it when other pasture vegetation is available.

Mountain laurel. *Kalmia latifolia*. Figure 16, C to F.

Mountain laurel is a native shrub of pastures and dry hillsides on acid soils.

FIGURE 15. POISON HEMLOCK, *CONIUM MACULATUM*

A, seedling; $\times 1/3$. B, root with leaf rosette at beginning of the second year; $\times 1/3$. C, branch with umbels of flowers and fruits; $\times 1/3$. D, flower; $\times 5$. E, pistil, $\times 10$. F, fruit; $\times 6$. G, cross-section of fruit showing two cells each containing one seed; $\times 6$.

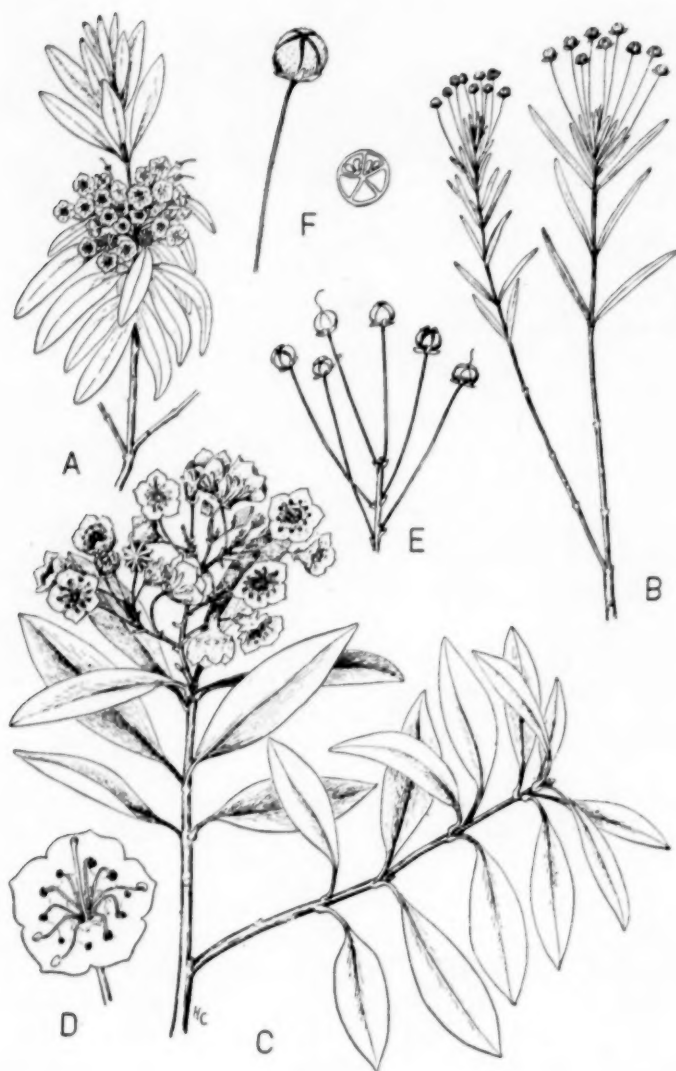


FIGURE 16. SHEEP LAUREL, *KALMIA ANGUSTIFOLIA* (A); SWAMP LAUREL, *KALMIA POLIFOLIA* (B); AND MOUNTAIN LAUREL, *KALMIA LATIFOLIA* (C TO F)

A, flowering branch; $\times 1/3$

B, flowering branch; $\times 1/3$

C, flowering branch; $\times 1/3$. D, flower; $\times 1$. E, cluster of capsules; $\times 1/3$. F, capsule; $\times 1$

During winter and early spring, when there is little other green growth, sheep frequently will browse laurel leaves with fatal results. At other times animals unfamiliar with laurel will sometimes graze the shrub. Mountain laurel is best known as a *sheep-poisoning plant* because it grows in the poor uplands used as sheep range. Other animals are susceptible.

Sheep laurel. *Kalmia angustifolia*. Figure 16, A.

Sheep laurel, a low shrub of dry, acid soil, and bogs, and swamp laurel (*Kalmia polifolia*), figure 16, B, frequent in acid bogs, are related plants containing the same poisonous principle.

Animals suffering from laurel poisoning show increased salivation, tearing, and a flow of secretions from the nose. Later, vomiting and convulsions are followed by paralysis of the limbs. Poisoned animals ill for several days will sometimes recover.

Indian hemp. *Apocynum cannabinum*.

Indian hemp, a native perennial, is frequent in gravelly fields, meadows, waste places, and along streams.

The green or dried plants sometimes poison cattle, horses, or sheep. Affected animals show increased temperature and pulse, accompanied by coldness of the extremities, dilation of the pupils of the eyes, and discoloration of mouth and nostrils. Further symptoms are sweating and refusal to eat or drink. A small quantity of the green leaves is enough to kill a horse or cow.

The spreading dogbane (*Apocynum androsaemifolium*) grows in similar locations and has similar poisonous properties.

European bittersweet. *Solanum dulcamara*. Figure 17, H to K.

European bittersweet is a common woody vine or scrambling plant in the moist, rich soil of stream banks, ditches, fence-rows and other waste places.

Grazing animals are occasionally poisoned by eating the leaves and new shoots. The shining red berries are also poisonous and when eaten in quantity may affect children.

Black nightshade. *Solanum nigrum*. Figure 17, A to C.

Black nightshade, a weedy annual plant, is frequent in waste places and open woods, especially in loamy soils. Its berries and leaves contain solanine, the same poison found in the European bittersweet.

Poisoning, which may result from eating the leaves or unripe fruits, is characterized by either a nervous or a gastric reaction. In the nervous form of poisoning, the symptoms are a narcotic stupor and paralysis. The less common gastric poisoning produces salivation, vomiting, bloating, and diarrhea.



FIGURE 17. BLACK NIGHTSHADE, *SOLANUM NIGRUM* (A TO C); BUFFALO BUR, *SOLANUM ROSTRATUM* (D AND E); HORSE NETTLE, *SOLANUM CAROLINENSE* (F AND G); AND EUROPEAN BITTERSWEET, *SOLANUM DULCAMARA* (H TO K)

A, branch showing habit; $\times 1/3$. B, flower; $\times 2$. C, berry; $\times 1$

D, branch showing habit; $\times 1/3$. E, fruit; $\times 1$

F, branch showing habit; $\times 1/3$. G, flower; $\times 1/2$

H, branch showing habit; $\times 1/3$. J, flower, view from above; $\times 1/2$. K, flower, side view; $\times 1/2$

Horse nettle. *Solanum carolinense*. Figure 17, F and G.

Horse nettle is a common perennial weed of grasslands and cultivated fields. Both horse nettle and a related annual form, the buffalo bur (*Solanum rostratum*), figure 17, D and E, are reported to have caused stock poisoning when animals feed on the foliage or berries.

Jimson-weed. *Datura stramonium*. Figure 18, D and F.

Jimson-weed is a stout annual weed of waste places and of cultivated ground, chiefly where the soil is rich. The leaves, roots, and seeds contain toxic alkaloids known to have poisoned cattle, horses, and sheep. Children are sometimes poisoned by eating the unripe seed pods.

The symptoms of Jimson-weed poisoning include headache, nausea, dizziness, great thirst, a burning sensation of the skin, dilated pupils, and loss of sight. Acute cases are characterized by delirium, convulsions, and death.

Indian tobacco. *Lobelia inflata*. Figure 18, A to C.

Indian tobacco is a native annual frequent in meadows and pastures. Although Indian tobacco has been used medicinally, overdoses may cause poisoning because of the toxic alkaloid content. Grazing animals are sometimes affected by feeding on the herbage.

The reactions to Indian-tobacco poisoning are typical of narcotic poisoning, with nausea, vomiting, exhaustion, prostration, dilation of the pupils, stupor, and coma followed by convulsions and death.

White snakeroot. *Eupatorium rugosum*. Figure 19.

White snakeroot is a common perennial plant of rich woodland soils in damp pastures and fields.

Poisoning usually occurs in late summer and autumn when pasture is short and cattle or sheep are forced to feed on the white snakeroot. The poisonous principle is tremetol, a fat-soluble substance that may pass into the milk. Milk from affected animals causes the disease known as "milk sickness" in humans.

In sheep or cattle poisoned by white snakeroot the most noticeable symptom is trembling in the muscles of the legs and about the nose, followed by constipation, nausea, labored respiration, weakness, and finally inability to stand.

Cocklebur. *Xanthium orientale*. Figure 20.

Cocklebur is a native annual weed of rich, rather moist soils. It is most troublesome on river-bottom lands. The germinating seeds and leaves of seedlings contain a toxic glucoside. The toxicity decreases as the plants develop. The seeds are borne in a spiny bur, and thus are seldom eaten

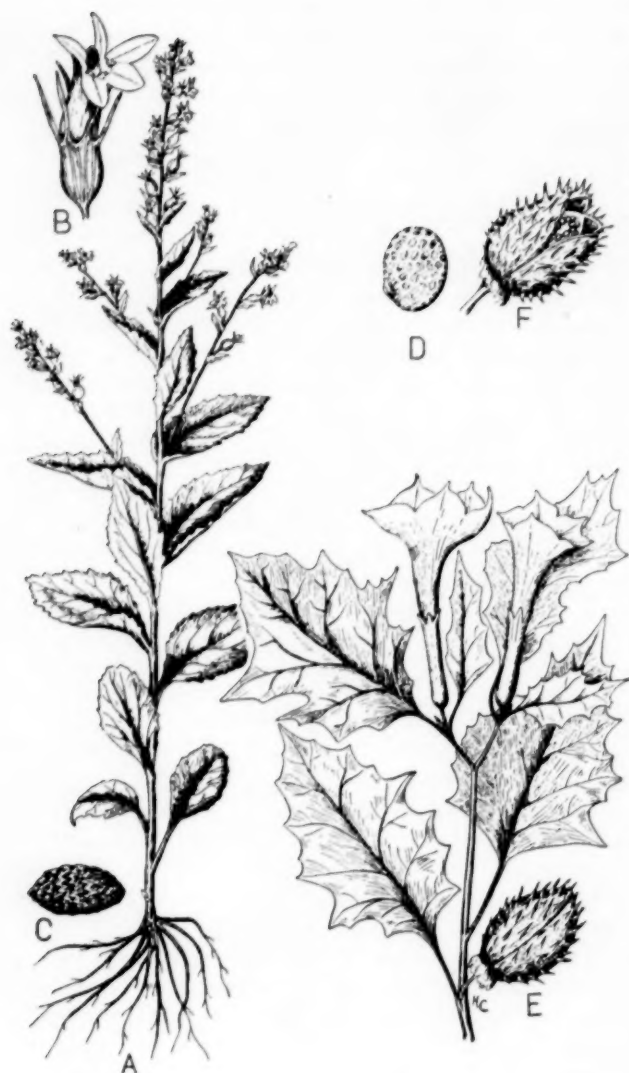


FIGURE 18. INDIAN TOBACCO, *LORELIA INFLATA* (A TO C), AND JIMSON-WEED, *DATURA STRAMONIUM* (D TO F)

A, plant showing general habit; $\times 1/3$. B, flower; $\times 2$. C, seed; $\times 18$.
D, seed; $\times 4$. E, portion of plant with flowers; $\times 1/3$. F, ripe seed capsule; $\times 1/3$

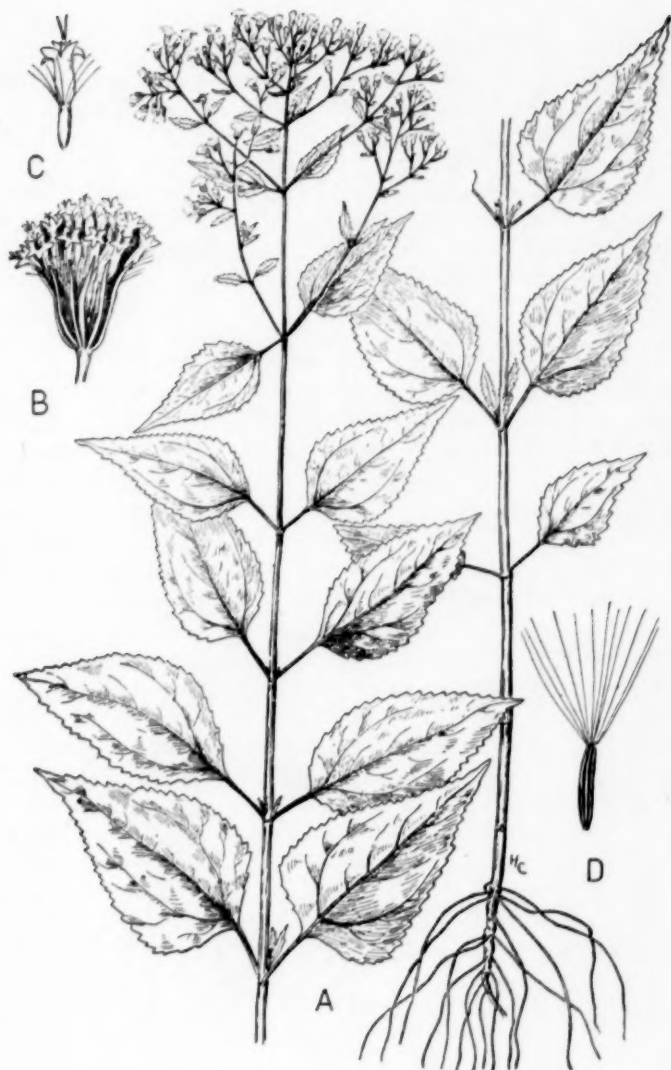


FIGURE 19. WHITE SNAKEROOT, *EUPATORIUM RUGOSUM*

A, plant showing general habit; $\times 1/3$. B, head of flowers; $\times 3$. C, flower; $\times 4$. D, seed (achene) with pappus attached; $\times 6$

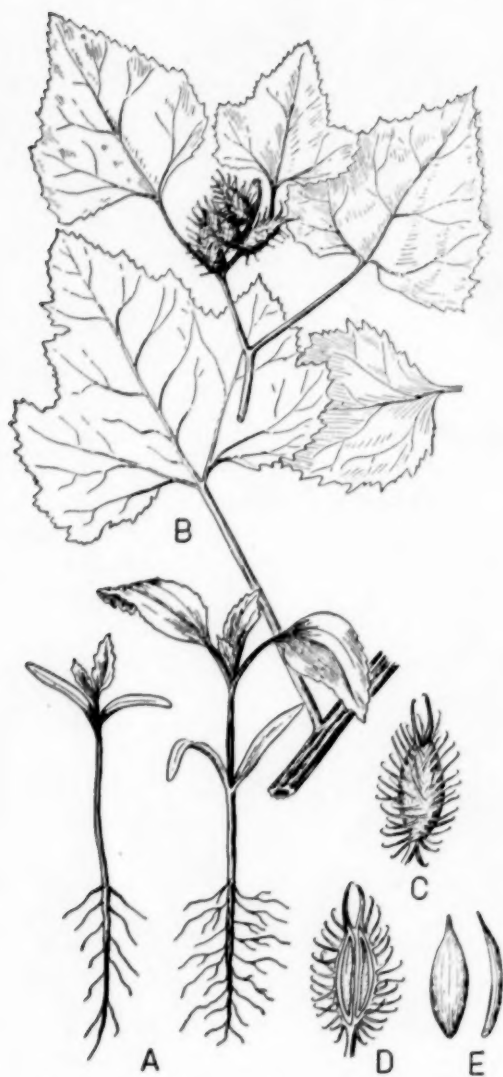


FIGURE 20. COCKLEBUR, *XANTHIUM ORIENTALE*

A, seedling; $\times 1/3$. B, leaf and fruiting branch showing habit; $\times 1/3$. C, mature bur; $\times 2/3$. D, vertical section of bur; $\times 2/3$. E, two seeds removed from bur; $\times 1$

by animals. Most cases of poisoning occur in swine, sheep, and cattle from eating the seedlings in early spring.

The symptoms are: depression, nausea, vomiting, rapid, and weak pulse, low temperature. The symptoms usually appear within a day after the plants have been eaten, and continue for only a few hours.

Some books on poisonous plants

Manual of Poisonous Plants. By L. H. Pammel. 1911.

A guide to the Poisonous Plants and Weed Seeds of Canada and the Northern United States. By R. B. Thomson and H. B. Sifton. 1922.

Poisonous Plants of the United States. By Walter Conrad Muenscher. 1939.

Directions for sending plants for identification

Plants suspected of being poisonous are frequently sent to the New York State College of Agriculture for identification. The College will gladly render this service to residents of the state who comply with the following suggestions:

Send enough of the plant to show leaves and, if possible, send also flowers and fruits.

Give the name of the locality and the county in which the plant grows.

If two or more kinds of plants are sent at the same time, each plant should have a numbered tag attached to it.

If plants cannot be sent in fresh condition, they should be pressed out flat and preferably dried and packed between pieces of cardboard before sending.

Every package should be marked, "For identification," and should bear the name and the address of the sender.

Address packages and correspondence to the Department of Botany, New York State College of Agriculture, Ithaca, New York.

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